REMARKS

With entry of the foregoing amendment, claims 1-24 are pending in the present application, with claims 1, 18 and 20 being in independent form.

Rejections under 35 U.S.C. § 101 (non-statutory subject matter)

Claims 1-17 stand rejected under 35 U.S.C. § 101. Applicant respectfully traverses.

A claimed process is statutory subject matter if the claimed process constitutes a practical application by producing a useful result. See M.P.E.P § 2106. In this case, claim 1 includes the step of assessing the risk of a borrower defaulting. Thus, the method is limited to a "practical application" of the mathematical algorithm because assessing the risk of a borrower is clearly a useful result. If it wasn't useful to assess the risk of a borrower defaulting on a loan, then why would thousands of lenders take the time to assess this risk? Clearly, claims 1-17 are limited to a practical application that produces a useful result. Therefore, the rejection of claims 1-17 under 35 U.S.C. § 101 should be withdrawn.

The Examiner contends the claimed invention "is not implemented on any specific machine or apparatus." This may

be true. However, it is completely irrelevant. As stated above, a claimed process is statutory if the process has a practical application and produces a useful result. It is irrelevant whether or not the process is implemented on any specific machine or apparatus. In this case, as demonstrated above, the process of claim 1 has a "practical application." Accordingly, the rejection of claims 1-17 under 35 U.S.C. § 101 should be withdrawn.

Rejections under 35 U.S.C. § 103 (Obviousness)

Claims 1-17 and 22 stand rejected under 35 U.S.C. 103 as being unpatentable over Tom (U.S. 5,832,465) in view of Hosmer (Applied Logistic Regression, 1989, chapter 1).

With respect to claims 1 and 22, Applicants submit claims 1 and 22 are patentable over Tom in view of Hosmer because (a) there is no suggestion or motivation to combine the references and (b) neither Tom nor Hosmer, considered alone or in combination, teach or suggest all of the features of claim 1 or 22.

(a) There is no motivation or suggestion to combine the references

The Examiner also contends that it would have been obvious to modify Tom's equations based on the teachings of Hosmer. This contention has no merit.

Hosmer discloses a regression technique. Tom discloses "a self-learning evidential reasoning system." There is

simply nothing in either Tom or Hosmer to suggest applying Hosmer's teachings to the self-learning evidential reasoning system taught by Tom. The Examiner doesn't even say how one would or could go about modifying the system disclosed in Tom to reach the claimed invention. Specifically, which equations disclosed in Tom should be modified and how would they be modified? These questions are not answered by the Examiner.

Furthermore, if it is obvious to modify Tom based on the teachings of Hosmer, then why did not Tom himself use the teachings of Hosmer? After all, Hosmer was published about 10 years before Tom filed his application. If Hosmer's teachings were applicable to Tom's invention, then why didn't Tom himself use Hosmer's teachings? The answer is obvious. Hosmer's regression technique is not at all related to Tom's self-learning evidential reasoning system.

In short, there is simply nothing in either of the references or in the knowledge generally available to one of ordinary skill in the art that provides a suggestion or motivation for combining the references. For this reason alone, the rejection of claim 1 should be withdrawn.

(b) Neither Tom nor Hosmer, considered alone or in combination, teach or suggest all of the features of claim 1

At the least, neither Tom nor Hosmer teach or suggest:

assigning a first weight … to the first

> credit factor; assigning a second weight … to the second credit factor; [and] calculating … a probability of default for the borrower, wherein the calculating step comprises multiplying the first credit factor by the weight assigned to the first credit factor to produce a first intermediate result, multiplying the second credit factor by the weight assigned to the second credit factor to produce a second intermediate result, and summing the first and second intermediate results,

as is recited in claim 1.

Tom discloses an expert system that can be used to deny or grant a loan application. The method performed by the Tom system is different from the claimed method in multiple ways.

First, the Tom system does not calculate a probability of default. Rather, the Tom system merely assigns a "credit worthiness" to each loan applicant. Tom simply does not calculate a probability value representing a mathematical probability that the loan applicant will default (i.e., a "probability of default for the borrower").

The Examiner contends that Tom does calculate a probability value representing a mathematical probability that the loan applicant will default. To support this contention, the Examiner asserts that "the final output value is 0.98308 is a probability value." This contention is without merit.

It is clear that the final output value 0.98308 is nothing more than a "linguistic evidential output value." Tom discloses a system wherein a set of linguistic evidential values are first translated into a set of evidential numeric

values. See col. 6, lines 12-14 ("the linguistic evidential data values for each input processing node are then translated into an evidential numeric value."). The evidential numeric values are "combined using an evidence aggregation function." Col. 6, lines 29-31. "Next, the evidential aggregation value is mapped to a linguistic evidential value using a mapping function." Col. 6, line 66 to col. 7, line 1. Therefore, it is clear that the output value 0.98308 is nothing more than a linguistic evidential value. A linguistic evidential value is not a probability value.

According to Tom, "for each linguistic output from a processing node in the model structure a distinct numeric value between -1.0 and 1.0 is assigned." Col. 10, lines 22-24. By definition a probability value is a value that must be between 0 and 1. Any value that can have a value less than 0 or greater than 1 by definition can not be a probability value. Thus, a linguistic evidential value cannot be a probability value because a linguistic evidential value can range between -1.0 and 1.0. Accordingly, the Examiner's contention that the output value is a probability value is incorrect.

Second, another major difference between the process taught and suggested in Tom and the claimed process is that the claimed process requires: (a) assigning a first weight to a first credit factor, (b) assigning a second weight to a second credit factor, (c) multiplying the first credit factor

by its assigned weight to produce a first intermediate result, (d) multiplying the second credit factor by its assigned weight to produce a second intermediate result, and (e) summing the first and second intermediate results. Tom does not teach or suggest any of these steps, let alone the combination.

In the method disclosed in Tom, the credit factors begin as linguistic evidential values. For example, the credit factor of "type of employment" may have the following linguistic evidential values: "stable," "unsavory," "un-garnishable," and "seasonal." See col. 5, lines 48-51.

According to Tom's method, one must translate the linguistic evidential values to evidential numeric values. See e.g., col. 11, lines 7-9 ("These [the linguistic evidential values] are translated to numeric values."); and col. 6, lines 12-14 ("the linguistic evidential data values for each input processing node are then translated into an evidential numeric value.").

"Once all of the linguistic evidential data values … have been translated into an evidential numeric value, then the evidential numeric values are combined using an evidence aggregation function." Col. 6, lines 28-31. "Next, the evidential aggregation value is mapped to a linguistic evidential value using a mapping function." Col. 6, line 66 to col. 7, line 1.

According to Tom,

> In order to overcome any weaknesses or inefficiencies during … the mapping of the aggregate numeric value to the

> linguistic evidential value at the output, this invention combines the numeric to linguistic evidential value mapping at the output of the input layer processing nodes with the linguistic evidential value to numeric translation at the input of the output layer processing node. This is achieved by using a weighting function, S, that is placed after the evidence aggregation function.

Col. 8, lines 57-67. Tom further states,

> the weighting function, S, is a stepwise function. In general, the weighting function, S, is a transformation (i.e., linear or nonlinear) from the [1,1] space to the [1,1] space. The parameters of the weighting function, S, are called weights, denoted by w. The input of the weighting function S is denoted by .theta., which is the aggregated evidence value. FIG. 6 shows the weighting function, S, in use with the model structure 24 in both the input layer and the output layer.

Col. 9, lines 7-15.

Applicants are willing to admit that Tom discloses using weights to determine the "credit worthiness" of a loan applicant. However, it is clear that those weights are not equivalent to or used in the same way as the claimed weights. The weights disclosed in Tom function to "transform" an "aggregated evidence value" into an output value. Col. 8, lines 57 to Col. 9, line 15.

Accordingly, at no point does Tom teach or suggest multiplying each credit factor by an assigned weight as is

claimed in claim 1. Accordingly, even if the "credit worthiness" output of the Tom system is a probability of default for the borrower, Tom does not teach or suggest all of the features of claim 1.

The Examiner appears to agree with our position that Tom does not teach or suggest multiplying each credit factor by an assigned weight. However, the Examiner contends that Hosmer makes up for the deficient teachings of Tom. This contention has no merit.

Nowhere does Hosmer teach or suggest assigning weights to credit factors, let alone multiplying the credit factors by their assigned weights to produce intermediate results and then summing the intermediate result. Hosmer, at most, discloses a technique for performing regression.

The rejection of claim 1 should be withdrawn for two independent reasons. First, there is no suggestion or motivation to combine Hosmer with Tom. And second, even if there were such a motivation, the combination would not teach or suggest all of the features of claim 1. Applicants, therefore, respectfully request that the rejection of claim 1 be withdrawn.

With respect to claim 2-17, these claims depend from claim 1. Thus, the rejection of claims 2-17 should be withdrawn for at least the same reasons give above with respect to claim 1.

(c) Neither Tom nor Hosmer, considered alone or in combination, teach or suggest all of the features of claim 22

At the least, neither Tom nor Hosmer teach or suggest:

> means for causing the computer to use EQUATION (2) to calculate a value indicative of the combination of said set of weights assigned to said plurality of credit factors,

as is recited in claim 22, as amended.

First, neither Tom nor Hosmer teach or suggest "[a] set of weights assigned to said plurality of credit factors," as is recited in claim 22. As discussed above, the "weighting" function disclosed in Tom functions to "transform" an "aggregated evidence value" into an output value. Col. 8, lines 57 to Col. 9, line 15. Nowhere does Tom teach or suggest assigning a weight to a credit factor. Hosmer doesn't make up for the deficient teachings of Tom. For this reason alone, the rejection of claim 22 should be withdrawn.

Second, although Hosmer discloses EQUATION 2, Hosmer does not teach or suggest using EQUATION 2 with the system devised by Tom. Moreover, there is nothing in Tom that suggests or motivates one to use EQUATION 2. As discussed above, Tom is directed to a self-learning evidential reasoning system, not a system for performing regression, as is disclosed in Hosmer. For this additional reason, the rejection of claim 22 should be withdrawn.

Rejections under 35 U.S.C. § 102 (Anticipation)

With respect to claims 18 and 20, those claims are written in "mean-plus-function" format. Accordingly, those claims should be construed so that each means-plus-function element is interpreted to cover the corresponding structure and equivalents thereof.

More specifically, with respect to claim 18, claim 18 recites "means for determining, using said plurality of first inputs and said plurality of second inputs, a set of weights, each weight in the set being assigned to one of said plurality of credit factors for each of said borrowers." The structure corresponding to this element is a computer programmed according to the method illustrated in figure 5. The method illustrated in figure 5 is neither taught nor suggested by Tom. For example, the method of figure 5 requires measuring the fit between calculated probabilities of default with observed defaults. Tom simply does not teach or suggest this step. On the contrary, Tom discloses a "gradient descent optimization" method. Col. 10, lines 7-8. Accordingly, Tom does not teach or suggest the claimed means for determining a set of weights.

Moreover, claim 18, as amended, requires assigning each determined weight to a credit factor. Tom does not teach or suggest this step. As discussed above, the "weighting" function disclosed in Tom functions to "transform" an "aggregated evidence value" into an output value. Col. 8,

lines 57 to Col. 9, line 15. Nowhere does Tom teach or suggest assigning a weight to a credit factor.

Applicant, therefore, respectfully requests that the rejection of claim 18 be withdrawn.

With respect to claim 20, like claim 18, claim 20 recites "means for … determine[ing], using said first input and said second input, a set of weights to be assigned to each of said plurality of credit factors." Accordingly, claim 21 is allowable over Tom for the same reasons given above with respect to claim 18.

Lastly, with respect to the remaining claims (claims 19, and 21 and 23-24), each of the remaining claims depends from either claim 18 or 20. Accordingly, each of these dependent claims is allowable over Tom for at least one the reasons given above.

CONCLUSION

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections, and that they be withdrawn.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

RESPECTFULLY SUBMITTED,					
NAME AND REG. NUMBER	Brian Rosenbloom, Registration No.: 41,276				
SIGNATURE			*DATE*	12/29/04	
Address	Rothwell, Figg, Ernst & Manbeck Suite 800, 1425 K Street, N.W.				
City	Washington	*State*	D.C.	*Zip Code*	20005
Country	U.S.A.	*Telephone*	202-783-6040	*Fax*	202-783-6031